

Transboundary spatial planning axes: Discontinuities and suggestions for harmonisation in the Elbe/Labe Euroregion

Sebastian Bartel^{1,✉} — Juliane Albrecht¹ — Vladan Hruška² — Kristyna Rybová² — Andreas Ortner³

¹Leibniz Institute of Ecological Urban and Regional Development, Weberplatz 1, 01217 Dresden, Germany

²Department of Geography, Jan Evangelista Purkyně University, České mládeže 8, 400 96 Ústí nad Labem, Czechia

³Chair of Land Management, Technische Universität Dresden, Dezernat 8, 01062 Dresden, Germany

✉ s.bartel@ioer.de

Abstract

Spatial planning axes are an important instrument of spatial planning to help connect urban areas and ensure the accessibility of rural areas and their development. The planning of such axes can steer population and traffic flows, decisions on the locations of economic developments as well as infrastructures such as cable networks. In this paper, current spatial planning axes and their continuity are analysed regarding their suitability to promote sustainable cross-border European development. Two neighbouring regions are investigated as examples, namely the Regional Planning Authority Oberes Elbtal/Ostertzergebirge (Germany, Saxony) and the Ústí nad Labem Region (Czechia). The overarching research question is how transboundary spatial planning axes can be harmonised? This can be broken down into the following three sub-questions: (1) Which differences exist between the Saxon and Czech planning systems? (2) How is the need for harmonisation assessed by planning practitioners? (3) Which transboundary recommendations can be given from a scientific perspective? To answer these research questions, expert interviews were conducted with relevant stakeholders from spatial planning authorities as well as scientific and political institutions.

Keywords

Sustainable Transboundary Development, Spatial Planning Axes, Germany, Czechia

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Highlights for public administration, management and planning:

- Different perceptions concerning the effects of the application of spatial planning axes were identified; i.e. spatial planning axes in Czechia primarily directed at economic activities, whereas established for improved connections and to boost development in Germany.
- Incompatibilities between German and Czech spatial planning cultures may hinder any endeavour for cross-border governance of spatial planning axes.
- Requirements and potentials for the harmonisation of spatial planning axes on both sides of the border are proposed.
- For the current spatial planning axes in Czechia, a stronger line-oriented designation of existing and newly designated axes is desirable and legally feasible.
- In the Saxon spatial planning documents, the rescaling of existing cross-border planning axes to Czechia would support the functions lost due to recent infrastructural developments at other locations.

1 Introduction

Spatial planning axes (sometimes also referred to as development axes or corridors)¹ are impor-

tant instruments of spatial planning to connect urban areas and to secure the accessibility of rural areas and their development. Within spatial plans, axes are used to organise and gather traffic flows, to steer decisions on the location of eco-

nomic developments as well as infrastructures such as cable networks. Different interpretations of spatial planning axes can lead to considerable disparities in their application as a planning instrument. Clearly, cross-border cooperation is necessary to support the physical continuation of axes and to enable the steering effect of this instrument. One major result of the European research project “Cross-Data” (2010–2013) on transboundary data management for spatial planning was the identification of discontinuities between the spatial planning axes within the Saxon-Bohemian border region (SMI et al. 2016).

Based on this knowledge, a follow-up project² was initiated by the Elbe/Labe Euroregion, which is particularly concerned by discontinuities in such axes. Based on two particular neighbouring border planning regions (the Regional Planning Authority Oberes Elbtal/Osterzgebirge and the Ústí nad Labem Region) the aim of this paper is to analyse existing spatial planning axes and investigate their continuity in order to assess their suitability to promote sustainable cross-border European development.

The main research question of the project and this paper is: How can the transboundary spatial planning axes be harmonised? This can be broken down into the following three sub-questions: (1) Which differences exist between the Saxon and Czech planning systems related to spatial planning axes? (2) How is the need for harmonisation assessed by planning practitioners? (3) Which recommendations for a transboundary axes planning can be given from a scientific perspective?

The research involved a broad range of methods. Relevant German and Czech scientific literature as well as spatial planning documents were investigated at different planning levels (national - state - regional - local). Based on the content analysis of the spatial planning documents a detailed description of identified discontinuities was possible and a compilation of the different graphic representations was enabled. Furthermore, expert interviews were conducted in 2017 in both countries with relevant stakeholders from spatial planning authorities as well as scientific and political institutions to better understand the practical use of spatial planning axes and their application in spatial planning. On the Saxon side, the interviews were conducted with the representatives of Saxon and regional planning authorities (Saxon State Ministry of the Interior, Regional planning authority Oberes Elbtal / Osterzgebirge) and spatial scientists. Czech interviewees worked with representatives of the Ministry for Regional Development

and regional authority of the Ústí nad Labem Region (which cover the Czech area of the Euroregion Elbe/Labe), and – in order to receive more complex insight into the issue of spatial axes planning – representatives of other two regions bordering with Saxony (Karlovy Vary and Liberec Region). The structure of the interviews consists of a first part focused on rather general issues of the perceived importance of the concept of spatial planning axes and a second part concerning the cross-border designation and application of spatial planning axes. Interview notes and protocols have been evaluated in an exploratory and case-specific manner with respect to the research questions.

The structure of this paper is as follows: The following second section provides the theoretical background to the concept of spatial planning axes, with a discussion of their purpose and limitations. In the third section we analyse the institutional background and key spatial planning documents in both countries regarding the planning of axes. The fourth section focuses on spatial planning practices accompanying the designation of spatial axes. In the fifth section we examine the transboundary discontinuities of planning axes in the case study regions resulting from different planning attitudes in Saxony and Czechia followed by a discussion of our main results. The concluding section offers a summary of results as well as some recommendations for spatial planning with regard to axis planning.

2 The concept of spatial planning axes

While the instrument of spatial planning axes is frequently applied in Central European countries such as Czechia, Germany, Poland and Slovakia or at the European level (e.g. Trans-European Networks), relatively less attention has been paid to this spatial planning tool within the scientific literature. From an academic perspective, the concept has been investigated over the years with varying levels of intensity. First studies (from the 1960s and 1970s) focused on the rise of linear urban patterns, their analysis and conceptualisation, whereas studies from the 1990s focused on the complex and multidimensional character of spatial axes and their governance. The studies from the 1990s are tightly related to the growing endeavour of the EU for borderless, more coherent and better integrated Europe since 1990s (Albrechts & Coppens 2003; Priemus & Zonneveld

2003). In this section, we will focus briefly on both approaches.

First, a number of studies occurred in the 1960s and 1970s, when the concept of development axes was devised (e.g. Pottier 1963; Boudeville 1966; Friedmann 1966; Hilhorst 1973; later also Geyer 1987; Blažek & Netrdová 2009). This was a reaction on a growing population decentralisation which started in the 1960s and 1970s in the Western developed countries (in the post-socialist countries this process started in the 1990s with the shift to the neo-liberal and democratic mode of economy and society). The growing population decentralisation was followed later by decentralisation of retail and manufacturing activities resulting in leapfrogging urban sprawl or ribbon development (Albrechts & Tasan-Kok 2009; Ženka et al. 2017).

The concept of development axes is derived from two general theoretical approaches, namely location and polarization theories. The purpose of these theories is, first, to identify factors determining the selection of locations for economic activities, and, second, to explain the spatial distribution of economic activities (Blažek & Uhlíř 2011). For example, the central place theory by Walter Christaller (1933) plays a major role in the current implementation of axes in planning documents (whereby the axes are understood as interconnections between two or more central places). Polarization theories attempt to understand unequal spatial development by defining locations of economic growth, variously designated as ‘p’ (Perroux 1950), ‘growth centres’ (Boudeville 1966), ‘poles’ or simply ‘cores’ (Friedmann 1966) in contrast to locations of economic decline or lagging peripheries. These theories examine interdependencies between cores and peripheries, their structuring factors as well as options and tools for spreading development from cores into the peripheral areas. They became very influential in regional economic planning although they never lived up to its early promise (Parr 1999a; Parr 1999b).

From this perspective, development axes were first conceived by Pottier (1963, quoted in Geyer 1987:272) and later developed by Boudeville (1966) and Friedmann (1966) as corridors with an increased level of human activity (Blažek & Netrdová 2009). Pottier (1963) defines development axes as “the dominating lines in a communications network” (quoted in Hilhorst 1973:3). These communication lines connect the spatial cores with the peripheries, thereby enabling a more equal distribution of decision-making powers, innovation, employment and incomes (Hilhorst 1973). Moreover, development axes not only help to spread such fac-

tors; they also have the ability to induce them by their own mechanisms. This ability is determined by the attractive force of cores (cities measured by population or level and innovation level of economic activity) that are connected by the development axes as well as the distance between them. Both of these general theoretical approaches are still acknowledged by spatial planners today.

Second, since the 1990s increasingly more scientists have recognised the multi-faceted character of the concept of corridors (Priemus & Zonneveld 2003). Processes constructing development corridors operate on many scales - local, regional, national or macroregional; integrate transportation and urban development planning; freight and passenger transportation; different modes of mobility (rail, road, inland waterways). Therefore, corridors cannot be defined simply as a linear infrastructure axes but rather as bundles of multidimensional and multi-scalar relations influencing or producing transport, economic and demographic processes (Witte 2014). Corridors also combine different functions (urbanization corridors, ecological corridors, transportation corridors, and economic development corridors - Albrechts & Tasan-Kok 2009).

Witte (2014:27) argues that ‘Despite the recognition of corridors and corridor development as a valid, empirically observable phenomenon, accurate spatial policy is oftentimes lacking.’ From this point of view, the question on governing such a complex body arise. How to establish a corresponding governance structure in order to grasp this complexity? Many authors draw attention to a weak institutional framework for governance of corridors - not only on the transnational (European) level but even on the national level. Here, the lack of institutional coordination is obvious especially on local level where local development interests intersect with central government land use and transportation policies (Witte & Spit 2016).

Location theories may be significantly (albeit implicitly) used for localization decision-making not only by public representatives but by enterprise leaders and managers as well. In this way such theories are used to greatly shape the present geography of foreign (and local) direct investment, especially the locations of new branch plants, retail units and logistic parks, etc. (Blažek & Uhlíř 2011) or they help to design emergency service plans locating e.g. new hospitals, fire stations, and warning sirens (Murray 2009).

However, academics and planners have voiced criticism of the presented theoretical approaches and their implementation in regional policy. Specifi-

cally, location and polarization theories have become unpopular in view of their unrealistic simplification of space (especially in the context of the central place theory) as well as the idealistic assumption of the rational behaviour of consumers (posited as Homo Economicus). A further reason is the emphasis of geographical location as the most important location factor for companies while other factors are neglected, e.g. accessibility of labour, labour costs, land/property costs, the regional embeddedness of the enterprise owner, etc. (Blažek & Uhlíř 2011). From the planning point of view, the concept of axes has been criticised again due to the simplification of space and overestimating the role of transportation networks for spatial development: Corridors very often do not form a continuous area with an increased level of urbanisation, economic activity etc. – they are rather necklace of pearl (Witte 2014), necklace of beads (Chapman 2003) or pearls on a string (Albrechts & Tasan-Kok 2009) where ‘development’ concentrates only in limited number of places along the transportation lines. More importantly, corridors have been problematised due to their perception as a tool legitimating unsustainable urban sprawl and ribbon development and dismantling the compact urban form (Albrechts & Tasan-Kok 2009).

3 Hierarchy of designing the spatial planning axes

Concerning the current state of implementation of key outcomes of aforementioned approaches to spatial planning, in Germany, the central place theory is a crucial part of the country’s spatial planning system. Axes are part of the legally binding contents of spatial plans in Germany as well

as in Czechia, in both countries they are defined at various planning levels. In Germany spatial planning axes have been designated in spatial plans at the state (Land) and regional level since the 1950s (Kistenmacher 2005). Notably, spatial planning axes have been regulated by the Federal Spatial Planning Act (Raumordnungsgesetz) since 1998. In today’s Czechia, the concept of spatial planning axes is relatively young. It was legally introduced by the Czech Act on town and country planning and building code 183/2006 Coll. (hereinafter within the text as Building Act) and practically implemented for the first time by the national strategic document Spatial Development Policy of the Czech Republic (Politika územního rozvoje – hereinafter within the text as PÚR) of 2008.

3.1 Germany (Saxony)

Reflecting the country’s federal system, axes in Germany are designated in state-wide spatial structure plans of the Länder as well as in regional plans. The competence for establishing spatial plans at the national level is highly restricted (see Table 1); nationwide spatial plans have not yet been established apart from marine spatial plans in the exclusive economic zone (cf. § 17 Raumordnungsgesetz, ROG). In Saxony, axes are components of the settlement structure, which must be designated (in addition to open-space structure and infrastructure) in the state-wide spatial structure plans established by the Saxon Ministry of the Interior and in the regional plans. While the term “axes” is mentioned in § 13 para. 5 sent. 1 no. 1 ROG, it is not precisely defined. According to the general understanding in relevant literature, axes are characterised by the bundling of linear infrastructure (especially transport routes) and a sequence of concentrated settlements (Kistenmacher

Table 1 Spatial plans in Germany

Planning Level	Planning Instruments	Plan Contents
Federation	Spatial plans for the German Exclusive Economic Zone and the federal territory, § 17 ROG	Targets and principles for selected land or sea uses and functions (e.g. flood protection); specification of individual principles of § 2 para. 2 ROG
States (Länder)	State-wide spatial structure plan, § 13 para. 1 no. 1 ROG, Regional plan, § 13 para. 1 no. 2 ROG	Targets and principles for land use and land functions, esp. for settlement structure, open-space structure, infrastructure
Municipalities	Preparatory land use plan, §§ 5 ff. BauGB Legal binding land use plan, §§ 9 ff. BauGB	Development concept for the municipal territory and its functional land use, type of urban development Site-related regulation of type and density of urban development

Source: Ortner et al. (2018)

Table 2 Spatial planning documents in Czechia

Planning Level	Planning Instruments	Plan Contents
State	Spatial Development Policy (Politika územního rozvoje), § 31 Building Act	State-wide priorities of spatial planning, designation of development areas and development axes, special areas, corridors and areas for transport infrastructure and technical infrastructure
Regions	Principles of spatial planning (Zásady územního rozvoje), § 36 Building Act	Demarcation of development areas and axes of national and regional importance, areas and corridors for transport, infrastructure and technical infrastructure
Municipalities	Land use plan for the municipality, § 43 Building Act, Legally-binding land use plan, § 61 Building Act	Development concept for the municipal territory and its functional land use, demarcation of the development area, Site-related regulation of the urban development

Source: Ortner et al. (2018)

2005). While supra-regional axes must be designated in the state-wide spatial structure plans, axes of regional importance are defined in the regional plans. Consequently, the designation of regional significant “*interconnecting and development axes*” is mentioned in § 4 para. 2 lit. d of the Saxon Planning Act (SächsLPlG) as a necessary content of regional plans. Regional planning in Saxony is the responsibility of rural districts and urban municipalities, which band together for this special purpose into regional planning communities. There is no legal requirement for the designation of axes in local land use plans. However, the stipulations of the local land use plans have accord with the axes designated in spatial plans (cf. § 1 para. 4 Federal Building Code – Baugesetzbuch, BauGB).

3.2 Czechia (Ústí nad Labem Region)

In Czechia, so-called development axes are integrated into the national Spatial Development Policy (PÚR). They are also included in regional plans (Zásady územního rozvoje – hereinafter within the text as ZÚR) (see Table 2). PÚR, which was established by the Ministry of Regional Development, specifies the requirements and framework of spatial planning in the national, cross-border and international context (cf. § 31 Building Act). As determined by § 32 para. 1 lit. b Building Act, PÚR designates areas with increased requirements regarding land use due to a concentration of activities of international, national and supra-regional importance, i.e. “*development areas and development axes*”. ZÚR incorporate the development concept for the region with the essential requirements for an appropriate economic framework (§ 36 Building Act). They designate “*development areas and development axes*” and deal with supra-local and regional interrelations. ZÚR are elaborated

by the regional authority and adopted by the regional assembly. As in Germany, axes are not designated in municipal land use plans. However, the local plans must reflect the specifications of the supra-local spatial plans. In addition to the mentioned spatial plans, so-called strategic plans are established in Czechia, also termed “*development strategies and programmes*”. While these plans must be drawn up at the national and regional level, they are an optional instrument at local level. However, the legal basis for these plans (Act on regional development support 248/2000 Coll.) does not refer to the content of PÚR and ZÚR, and consequently ignores the axes designated therein.

4 Practices and approaches for the designation of spatial planning axes

Based on the expert interviews, it was possible to identify similarities and differences in planning practice. Axes seem to play a more prominent role in Saxony due to a greater experience with this concept as well as its complementarity to the central place theory within spatial planning. Among other purposes, the axes in Saxony serve to connect central places, making them an important component of spatial planning. On the Czech side, in contrast, municipalities are not hierarchically ordered according to their central function, and hence the interconnection of places on the same hierarchical level (for example between regional capitals Karlovy Vary - Plzeň, Ústí nad Labem - Liberec etc.) is not a significant part of national spatial planning. In Czechia as well as in Saxony, the transport function is seen as one of the most important functions of axes. In Czechia, this is also

connected with the economic development function, specifically with the attraction and concentration of national as well as international investments into the area defined by the axes in order to save the landscape character beyond the axes. In Saxony, a further important aim of axes is to support rural development, while in densely populated areas it also has a regulating function to bundle and concentrate infrastructures. Both sides mentioned the practical difficulties of applying the concept. Axes are of little significance at the municipal level; instead, they play a bigger role in discussions about the location of large investment projects. Depending on the interests of the municipalities, axes can be utilised as an argument for or against a proposed investment. Particularly on the Czech side, there seems to be a lack of awareness of the concept at the local level. The Czech respondents pointed out the lack of funding programmes to support the implementation of objectives resulting from the position on an axis. Without funding, the practical implications of axes remain unexplored and municipalities are left to pursue their own goals. Last but not least, the level of institutionalization of spatial planning axes as a planning concept is different in both countries resulting in different qualities of their implementation on various spatial scales. The evaluation of selected spatial plans in Czechia, with a focus on strategic planning documents in Czech cities, shows that the concept of axes is a top-down steering approach from the national level. The relative novelty of the spatial axes concept in Czechia (as already said, the instrument was first introduced in 2008 in the PÚR) might explain its poor implementation, especially within strategic planning documents where until now it has not been implemented at a regional or local level. In contrast, Germany has a long-standing tradition of designating spatial axes based on the central place theory. To realise the transboundary as well as supra-regional linking of axes, it is vital to ensure a common understanding of the axes concept in each region. When there is no such understanding, problems arise not only at the national border between Czechia and Germany, but also at internal borders between neighbouring states in Germany and regions in Czechia. If neighbouring regions do not pursue common goals, it is likely that the national or regional axes will simply terminate at the border rather than continuing on to the other side. The interviews confirmed the deep interest in understanding and discussing the situation with neighbouring regions. While the connection between Dresden and Prague was often mentioned as an example of good prac-

tice (however intensively promoted from the EU via Trans-European Networks), there are other spaces on the border that need further discussion with regard to the harmonisation of axes planning. Based on the interviews, it seems that stakeholders already have suitable platforms for this like the Expert Group Spatial Development (“Fachgruppe Raumentwicklung”) of the Euroregion Elbe/Labe and the Saxon-Bohemian Working Group for Spatial Development (“Sächsisch-Böhmische Arbeitsgruppe Raumentwicklung”).

5 Transboundary discontinuities in spatial planning axes designation

The analysis of spatial planning documents and the expert interviews confirm the relevance of the concept of spatial axes on both sides of the border. Inconsistencies, however, can be found between investigated Czech and German planning documents and ways of incorporation of axes as a spatial planning concept. These inconsistencies start already on the level of cartographical representation in spatial planning documents. For instance, from the cartographical point of view, graphic representations of regional and supra-regional spatial axes are always line-oriented in Germany. In Czechia, in contrast, area-oriented designations dominate in spatial plans; line-oriented designations are relatively rare because this kind of representation is optional in Czechia whereas area-oriented axes must be designated in each region (Ortner et al. 2018). This leads to many misunderstandings in cases when line-oriented representations in German documents meet Czech area-oriented representations of spatial axes evoking for German readers missing connection although it is present in reality. Regarding the selected case study regions, we will now discuss in more detail four concrete intersections of spatial planning axes regarding the requirements and options for their harmonisation on both sides of the border (see Fig. 1).

5.1 Spatial Planning Axis Dresden - Ústí nad Labem - Prague

As this axis is a part of the Trans-European Network (Orient/East-Med Corridor), it is designated on both sides of the border in the state development plan of the Free State of Saxony and PÚR in Czechia, and hence requires no harmonisation. It runs across both sides of the border (content-related and carto-

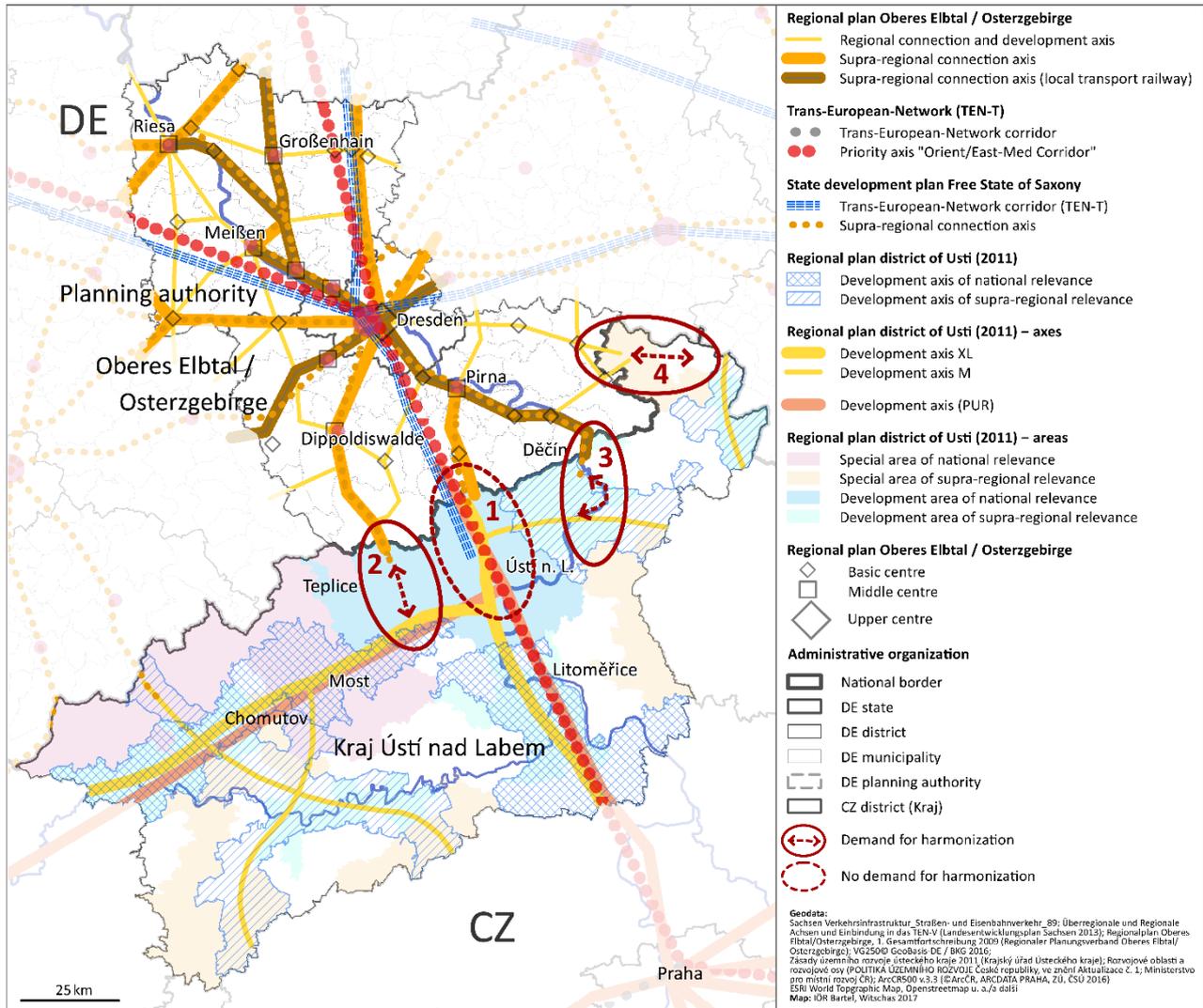


Fig. 1 Transboundary spatial planning axes in the case study planning regions “Oberes Elbtal/Osterzgebirge” and “Ústí nad Labem”. Source: Modified after Ortner et al. (2018).

graphically) along the motorway Dresden - Ústí nad Labem, highlighting its international and national relevance. The joint planning of the new high-speed rail link from Dresden to Prague confirms its significance.

5.2 Spatial Planning Axis Dippoldiswalde - Zinnwald - Cínovec - Teplice

On the Saxon side, this supra-regional axis passes from Dresden via Dippoldiswalde to Zinnwald at the Czech border. However, on the Czech side, there is no designation of a development axis. The original importance of the axis as an essential transportation connection between Czechia and Germany has diminished since 2006 following the construction of the transboundary motorway

Dresden - Ústí nad Labem. Nonetheless, the classification as a supra-regional axis has been retained in Germany even though its actual impact is primarily local, namely in fostering development impulses for the towns of Teplice and Altenberg. The designation as a supra-regional axis on the German side of the border could be therefore downgraded to a regional axis.

5.3 Spatial Planning Axis Dresden - Reinhardtsdorf-Schöna - Hřensko - Děčín

From the German side of the border, a supra-regional axis connects to a so-called development area of supra-regional relevance on the Czech side, close to the town Děčín. The continuation of the German axis to Děčín would support re-

gional cross-border development. Consideration, however, could be given to downgrading the German axis from a supra-regional to a regional axis; its relevance as an important (train) transportation connection will decrease in coming years due to the planned high-speed railway link between Prague and Dresden.

5.4 Double Spatial Planning Axis Neustadt in Sachsen - Langburkersdorf - Lobendava - Velký Šenov respectively Sebnitz - Dolní Poustevna - Velký Šenov

This axis is highly important for the German towns of Neustadt in Sachsen and Sebnitz because it is the shortest connection to Zittau (via Rumburk) and further to Liberec or Bogatynia. However, there is currently no road connection between Lobendava and Langburkersdorf. Construction of this connection is anchored in the text of the ZÚR of the Ústí nad Labem Region although there is no graphic expression of this in the plan. The aim of Czech planners is to kickstart or promote economic development for this economically weak region (Lobendava - Křečany Special Area). However, it will prove difficult to implement this axis due to the resistance of local people on the German side of the border who are afraid of increased traffic and noise in their municipality.

6 Discussion

Concerning the meta-theories of spatial planning used in both countries, in Germany the central place theory plays a major role in the implementation of spatial planning axes in planning documents. However, in Czechia planners got inspired rather by the growth-pole-theory and in the planning documents they identify apart from the development axes also development cores (12 development cores on the national level) which should primary concentrate social and economic development. A less dense network of development cores in comparison with German spatial planning does not induce designation of regional and local spatial planning axes – thus, contrary to Germany, in Czechia the spatial planning axes do not have the function of stabilisation and development of rural settlements via their better accessibility. Other differences in spatial planning are the result of the different traditions of planning cultures in Germany and Czechia. The spatial planning instrument of axes seems to have a higher relevance in Saxony (Germany) than in Czechia. Axes in Germany

are primarily linked to traffic flows and infrastructure, whereas in the Czech context the spatial planning axes are intended to resolve issues of business location and to foster development activities. This might be given by the period of formation of development axes in Czechia as a spatial planning concept – at the beginning of 2000s the endeavour of central government to attract as many foreign direct investments as possible culminated (Zamrazilová 2007). New enterprises in manufacturing, logistics etc. then very often preferred to locate in very well accessible locations along the major transport communications. The relative novelty of the spatial axes concept in Czechia (in Germany this planning tool has had tradition since the 1950s, see above) might also explain its poor implementation, especially within strategic planning documents where it has not been implemented at a regional or local level until now. Regarding this fact, it seems that the concept of axes in Czechia is implemented within a top-down steering approach initiating from the national level with hitherto only limited implementation on lower tiers of spatial planning. However, similar can be said about the German approach: with decreasing planning level the intensity of implementation of axes is sinking and less tangible. This leads to the question of governance of spatial planning axes. Apart from their vagueness on a local level where paradoxically their impact on local economy and society is most intensive, the cross-border coordination of axes needs better coordination. This is obvious on at least three of the four investigated axes within the Euroregion Elbe/Labe (apart from the axis Dresden – Ústí nad Labem). This concerns the joint map language of documents, sharing of methodological approaches for delimitation of axes and suggesting their hierarchical classification. However these differences are results of unequal spatial planning traditions in both countries and their equalisation will require mutual communication and understanding.

7 Conclusions

The investigation has shown that different perceptions concerning the effects of the application of spatial planning axes exist and that the level of institutionalization of spatial planning axes as a planning concept is different in both countries resulting in different qualities of their implementation on various spatial scales. Inconsistencies can be identified based on the investigated planning documents. In Germany, for instance, we find only line-oriented designations for regional and supra-

regional spatial axes, whereas in Czechia area-oriented designations are dominant in spatial plans with line-oriented designations only used occasionally (Ortner et al. 2018). This is just one of many examples of incompatibility between Czech and German spatial planning which hinder the endeavour for a cross-border governance of spatial planning axes. We therefore give recommendations and highlight potentials for the harmonisation of spatial planning axes on both sides of the border. Based on the chosen study area of the Euroregion Elbe/Labe, four concrete intersections of spatial planning axes were investigated regarding the requirements and potentials for their harmonisation on both sides of the border. For the current planning axes in Czechia, a stronger line-oriented designation of existing and newly designated axes is desirable and legally feasible. If this could be realised, the linear-oriented axes (coming from Germany) could be continued at least graphically also in Czechia. In the Saxon spatial planning documents, the rescaling of existing planning axes would better reflect the reality of these communication axes which lost their importance due to recent infrastructural developments at other locations (Ortner et al. 2018). At a theoretical level and in view of the relative neglect of spatial planning axes by academics, spatial researchers can help planners with the conceptualisation, designation and implementation of axes in planning documents. From a scientific perspective, planning practitioners can draw useful information from the scientific literature to explain how development mechanisms work and how spatial axes can be created to foster increased development. This is especially needed at the local level, where axes find only limited application. Local actors would benefit from a clearer understanding of the conceptualisation and anchoring of axes in physical space, with regard to the concrete infrastructure and planning measures that have to be implemented locally. Based on this 'localization of spatial planning axes', financial sources and development grants can be more efficiently employed to implement axes. In closing, we would like to underline the value of studying the theories of local geography or spatial planning in order to avoid discontinuities at national or even regional borders, as confirmed by the discussed case study of the Czech-Saxon border area.

Notes

¹ Hereinafter when speaking generally about axes used in spatial planning, we use the term spatial planning axes. The term "de-

velopment axes" which is used in Czechia is not suitable for the German "interconnecting and development axes" as explained in Chapter 3.1.

² Project "Untersuchung der Passfähigkeit der grenzüberschreitenden Achsen in der Euroregion Elbe/Labe - Výzkum návaznosti přeshraničních rozvojových os v Euroregionu Elbe/Labe" funded by the European Regional Development Fund (within the Programme of Cross-border Cooperation - Free State of Saxony and the Czech Republic 2014-2020).

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